

this is the resultant blending of the two pharaoh notes, which one hears the individual sing ordinarily. I was given exceptional opportunities to hear these notes in chorus by studying them from the tops of the high cliffs on the ridges, where one was virtually in the tree tops themselves from this vantage point.

All in all it is a wonderful experience to be present during the grand exodus of these cicada broods, and to hear their millions in voice, as if the leaves of the forests themselves were breathing aloud or indulging in an audible murmur of sound. Wonderful is it that the mysterious designs of life should have originated such an anomalous and interesting insect, to spend 17 years in dark, underground burrows, and but a few weeks in the air and sunshine, merely to sing and to reproduce for a few short hours. Let us hope that the race will survive as long as life itself graces the surface of our planet with its marvellous expressions.

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### THREE NEW SPECIES OF Aedes FROM NETHERLANDS NEW GUINEA

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Three new species of the lesser subgenera of *Aedes* (*Pseudoskusea*, *Leptosomatomyia*, and *Skusea*), taken by members of this laboratory in the Hollandia sector of Netherlands New Guinea are described in the following paragraphs. Each of the three species is apparently an uncommon one in the area.

#### *Aedes* (*Pseudoskusea*) *lunulatus*, new species

MALE.—*Head*: Proboscis entirely dark, slightly longer than fore femur. Antennae about two-thirds length of proboscis, densely plumose with long pale hairs directed mostly in two planes. Palpi almost as long as proboscis, last two segments bristly, turned slightly downwards; tip of long segment and apical segments slightly swollen. Clypeus dark, bare. Vertex and lateral surface with broad, creamy white scales covering entire surface, patch of yellowish upright forked scales posteriorly. *Thorax*: Scutal integument brownish, covered with narrow dark scales and with long, dark bristles, a few narrow yellow scales along anterior margin. Scutellum with narrow black scales and long bristles on all lobes. Postnotum dark brown, bordered by yellow. Anterior pronotum

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\*From the 19th Medical General Laboratory, U. S. Army, of which Colonel Dwight M. Kuhns, Medical Corps, is Commanding Officer. Contribution Number Six from the Entomology-Mammalogy Department.

with long, dark bristles and yellowish hairs. Pleura and posterior pronotum with pale yellow integument spotted with black (Pl. 11, A). Posterior pronotum with a dark, crescentic spot on upper half with scattered, dark hair-like scales; a group of long, dark hairs just below dark spot; a row of about six yellowish bristles posteriorly. Postspiracular area dark, with numerous yellowish bristles, the dark color extending forward as a stripe to propleuron. Prealar knob dark, with a group of dark bristles. Sternopleuron with an upper dark spot and patch of bristles, a large patch of broad white scales centrally, a large dark area anteriorly below, and a row of long, pale hairs along posterior border. Mesepimeron with numerous long yellowish hairs along upper border, a patch of white scales centrally, and at least 6 long, pale lower posterior hairs. Propleuron dark, covered with numerous fine, yellowish bristles. Wings with all scales dark, outstanding (plum) scales of fork of vein 2 slightly broadened (scales of vein 3 and 4 rubbed in holotype, but male paratypes show slightly broadened scales on tip of veins 3 and fork of vein 4); upper fork cell about equal in length to stem, its base slightly nearer tip of wing than that of lower; posterior cross vein more than its own length closer to base of wing than anterior. Length of wing 2.5 millimeters. Coxae with pale bristles and a few white scales. Remainder of legs uniformly clothed with dark scales. Fore tarsal claws nearly equal, the larger one toothed; mid claws sub-equal, simple; hind claws small, simple. *Abdomen*: Dorsal and lateral surface clothed with black scales, segments IV to VII with complete narrow basal bands of yellowish scales broadening into lateral spots (paratype males show basal bands on II and III as well, but these segments are obscured in holotype); sternites with basal bands of yellowish scales and apical bands of black scales. *Hypopygium* (Plate 12): Ninth tergite lightly sclerotized, widely divided medianly, each-lobe bearing five stout bristles. Paraproct a pair of simple prongs, tips heavily sclerotized and slightly curved. Phallosome simple, smooth, bullet shaped. Coxite about three times as long as width at apical third, basal half narrower than apical half, the tip bluntly rounded; bearing some scales and scattered bristles; inner margin of basal two-fifths with a dense longitudinal row of long drooping bristles. Style slender, about two-thirds as long as coxite, strongly curved apically, with a single short, subapical bristle; apical appendage slender, nearly a third as long as style.

FEMALE.—Differs from male as follows: Antennae almost as long as proboscis, dark with scattered pale hairs, 3 to 6 long dark bristles radiating from the base of each flagellar segment, a group of shorter bristles near the apex of the first three flagellar segments; palpi dark, about one-sixth length of proboscis; scutum with a pair of submedian bare lines anteriorly; wings with outstanding scales of veins 2 to 4 long, linear, slightly broadened at tip of vein 2; halteres (not visible in holotype) pale yellow at base of stem, apex of stem and bulb dark; tarsal claws not toothed; abdominal segments II to VI with complete

narrow basal bands, VII entirely black scaled; VIII retractile, triangular, latterly appressed, scaleless, yellowish; cerci yellowish, fairly long.

LARVA.—(Plate 11, B, C.) *Head*: Antenna slender, more than half as long as head, with few but prominent spicules on median and apical part of shaft; antennal hair single, lightly plumose, arising at about middle of shaft. Preelypeal spines slender, straight, almost half as long as antenna. Head hair A (preantennal) with 10 plumose branches, arising just posterior of base of antenna; B considerably longer than head, single, thick at base and tapered to a point apically, plumose, arising well posterior and interior of A; C about a third as long as B, with 3 plumose branches; arising just interior and posterior of B; *d* not found; *c* single; outer sutural 6 branched. *Abdomen*: Lateral comb of segment VIII a large dense triangular patch of narrow, elongate, bluntly rounded scales each with several small terminal denticles; apical scales distinctly longer than basal ones. Pentad hairs long, 1, 3, and 5 plumose, 1 with 8 branches, 2 with 3 branches, 3 with 6 branches, 4 single or double, 5 with 7 or 8 branches. Siphon darkly pigmented; ratio about 2.5; apical half strongly tapered; apex less than half as wide as base; surface covered with short rows of minute denticles; prominent acus present; from 12 to 15 pecten teeth not quite reaching middle of siphon, each tooth with 1, 2, or 3 basal or sub-basal denticles; ventro-lateral hair tuft arising about level with apex of terminal pecten tooth, almost half as long as siphon, from 3 to 5 branched. Saddle covering about half of anal segment, saddle hair single (divided apically on one side of one specimen). Dorsal sub-caudal hair tuft 8 branched, ventral one single. Ventral brush of 12 thickly branched but rather short hair tufts, all arising from a grid. Anal gills about as long as saddle, gently tapered to a rounded point apically.

*Holotype*.—Male (459), reared from larva taken from crayfish hole in shaded rain forest, 250 feet elevation, Hollandia, Netherlands New Guinea; 22 January 1945, W. T. Nailon, collector. *Allotype*.—Female, same data as above. *Paratypes*.—2 males and 2 females, same data as above; 1 male (459A) taken from the crayfish hole at the time the larvae recorded above were collected; 8 males and 2 females taken by the authors in a light trap at the edge of rain forest, elevation 250 feet, Hollandia, on the following dates: 19 and 22 March 1945, 3, 4, 8, 16, and 22 April 1945. Holotype, allotype, paratypes, larva, and larval exuviae deposited in the United States National Museum; others in the Museum of the Division of Economic Entomology, Council for Scientific and Industrial Research, Canberra, A. C. T., Australia.

This is a distinctive species which we readily distinguished while sorting large numbers of light trap specimens by the small size, the contrasting dark scutum and pale pleura, the distinctive dark spots on the pleura, especially the dark cres-

cent on the posterior pronotum for which the species is named, and by the banded abdomen.

Few other Pseudoskuseas are known from Australasia. The present species is presumed to be distinct from *A. (?P.) culiciformis* (Theobald 1905, p. 77) since no mention is made of the characteristic pleural spots in Theobald's description of his species. Moreover, he described the wing scales as "taeniorhynchus-like but small," which is believed to mean broadened, as contrasted with the long narrow scales in *lunulatus*. The type of *culiciformis* was a female from Paumotu River, New Guinea, and is presumably in the Hungarian National Museum. The male is unknown. From other species of *Pseudoskusea* of the Australasian Region (Theobald 1905, p. 78, Edwards, 1924), *lunulatus* is quite readily distinguishable by the combination of banded abdomen, simple tarsal claws of the female, and unadorned scutum.

***Aedes (Leptosomatomyia) variepictus*, new species**

FEMALE.—*Head*: Proboscis distinctly longer than fore femur, curved downwards near apex, clothed with flat black scales and with a few, fine yellowish hairs; several long dark bristles arising ventrally at base; labellae yellowish. Palpi about one-fifth length of proboscis, clothed with flat black scales and a broad row of flat yellowish scales along the inner dorsal border except at tip. Antennae about three-fourths as long as proboscis, dark, with fine pale hairs and 5 or 6 bristles radiating from the base of each flagellar segment; torus and first flagellar segment covered on inner sides with yellowish scales. Clypeus dark, devoid of scales. Vertex with a wide central area of narrow golden scales and pale yellow upright forked scales, bordered by an area of broad black scales and dark upright ones; laterally with two stripes of flat creamy-white scales separated by a stripe of dark scales; eyes bordered by several long, black bristles and a very narrow line of fine yellow scales. *Thorax*: Scutum with fine black scales liberally sprinkled with fine yellowish scales; a narrow median line of yellow scales forked around the antescutellar disk; a broad border of similar scales anteriorly and laterally, curved partway around posterior part of fossae and extending as a pair of submedian lines nearly to tip of scutum; long golden bristles around margins (none dorsally). Scutellum with long, narrow yellowish scales on each lobe and a few scattered dark scales; long pale bristles from the posterior border. Postnotum with black integument, bare. Anterior pronotal lobe with narrow golden yellow scales on anterior half and broad white scales on posterior half, long yellow bristles arising from both halves. Posterior pronotum nearly covered with narrow golden scales, a few lanceolate and broad ones below and about 5 pale bristles along posterior border. Postspiracular area with long yellow bristles and a large patch of moderately broad white scales; anterior to this a v-shaped patch of broad white scales. A stripe of moderately

broad white scales just below the border of the mesonotum between the wing root and spiracle. Prealar knob with a dense patch of long yellow bristles and a patch of broad white scales. Sternopleuron with a large patch of broad white scales on upper half, a smaller patch posteriorly on lower half, and a row of long yellowish scales along posterior margin. Mesepimeron with a conspicuous stripe of broad white scales that curves from upper margin to the anterior margin and then crosses the sclerite horizontally just above the long lower mesepimeral bristle. Propleuron with broad white scales and about 10 long yellow bristles. Wings with dark scales on all veins except for a conspicuous line of white scales near the base of vein 1; outstanding (plume) scales of veins 2 to 4 long and narrow; anterior fork cell slightly longer than its stem; posterior cell arising slightly closer to the base of the wing than the anterior; posterior cross vein arising almost twice its own length more basal than mid cross vein; subcosta with a patch of black scales and 2 short bristles near base on under side of wing. Halteres with pale integument, a few dark scales at base of knob, light scales on knob. Coxae with separate patches of broad white and black scales and rows of long yellow bristles. Fore and mid femora with narrow basal yellow bands, outer surface clothed with black scales sprinkled with yellow some of which are grouped into small spots; inner surface with yellow and scattered black scales on basal two-thirds, apex chiefly black scaled; an irregular sub-apical band of yellow scales and a short apical longitudinal yellow line on each. Hind femur with only yellow scales on basal three-fourths of inner surface, apex black scaled; outer surface chiefly yellow scaled on basal two-thirds, black apex interrupted sub-basally by a narrow transverse line of creamy white scales, the outer and inner black apices divided by a narrow posterior longitudinal line of yellow scales. Fore and mid tibiae with narrow inner and outer basal white patches, otherwise black scaled; hind tibia with a conspicuous narrow basal white band elongated into patches on inner and outer surfaces; all tibiae with scattered yellow bristles. Fore and mid tarsi with a small basal white patch on segments 1 and 2, and a very narrow ring on 3; segment 1 of hind tarsus with a narrow basal white ring extending on upper side as a line about one-fifth length of segment; segments 2 to 5 each with a narrow basal white ring. Tarsal claws simple. *Abdomen*: Dorsum black scaled except for wide median basal patch of white scales on II to VI and an enlarged triangular patch on VII reaching almost to apex of segment; wide lateral lines of white scales arise basally and extend subapically for a short distance onto the dorsum of each segment. Venter mostly yellow scaled. Tergite VIII small, nearly covered by white scales and numerous yellowish bristles. Cerci fairly short and broad.

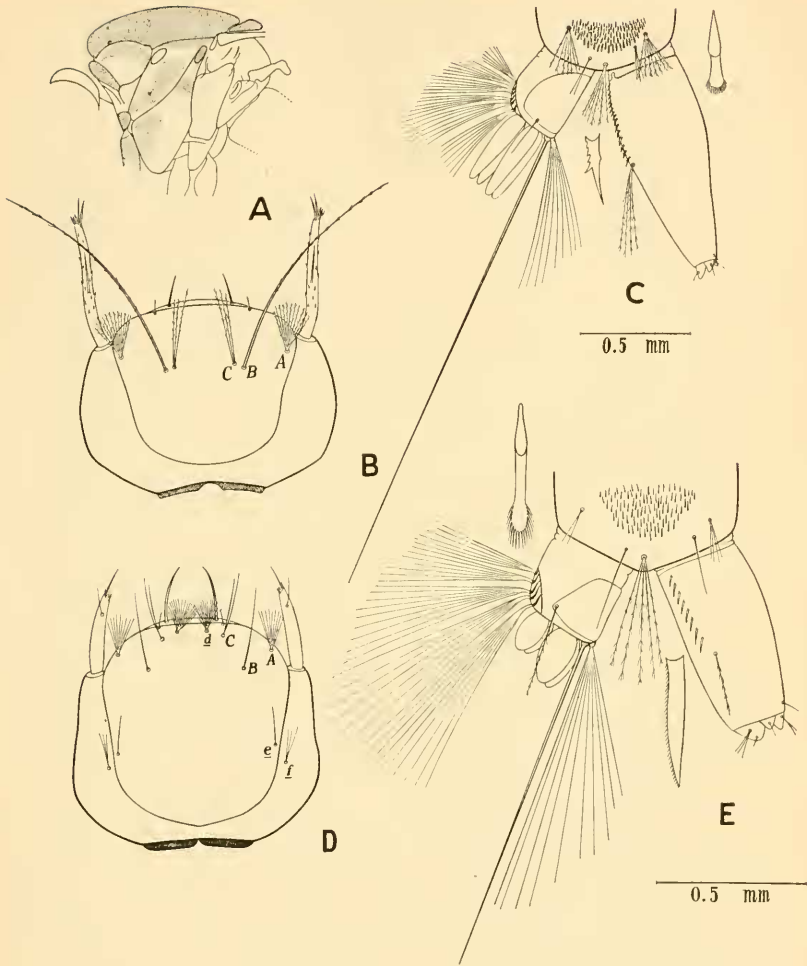
*Holotype*.—Female (1012) taken while trying to bite at 4:30 p.m. in mossy forest at about 4,700 feet elevation, Mount Dafonsoero, Cyclops range, Hollandia area, Netherlands New Guinea, 20 April 1945, W. E. Brewer, collector. *Paratype*.—

Female (1014) same data except that it was taken at noon 21 April at about 2,500 feet elevation; 2 females labeled "Dutch New Guinea, Cyclops Mts. 3400-4500 ft. iii, 1936. L. E. Cheesman B. M. 1936—271." (Two additional specimens from the same location are probably the same species but are in very poor condition. These specimens were examined in the U. S. National Museum through the kindness of Dr. Alan Stone.) Holotype and paratype deposited in the United States National Museum. The other two paratypes are to be returned to the British Museum.

These specimens resembled, *Aedes* (L.) *medialis* as described by Brug (1932) but differ from it in the following respects: scutellar scales almost all golden instead of almost all dark; the presence of the conspicuous sub-basal line of white scales on wing vein I, anterior fork cell not twice as long as its stem; the broad white scales on the anterior pronotal lobe; the conspicuous yellow ornamentation of the palpi; lateral white lines of abdominal tergites not reaching the apex of the segments; the white patch on each tibia, and white line on the hind tibia, etc. The species differs greatly from the third member of this subgenus, *A.* (L.) *aurimargo* Edwards, the most striking differences being that all scutellar scales are narrow (instead of flat); occiput with a wide median area of narrow scales; pale scales present at base of vein 1 and on palpi; ornamentation of pleura, legs, etc.

***Aedes* (Skusea) *dasyorrhus*, new species**

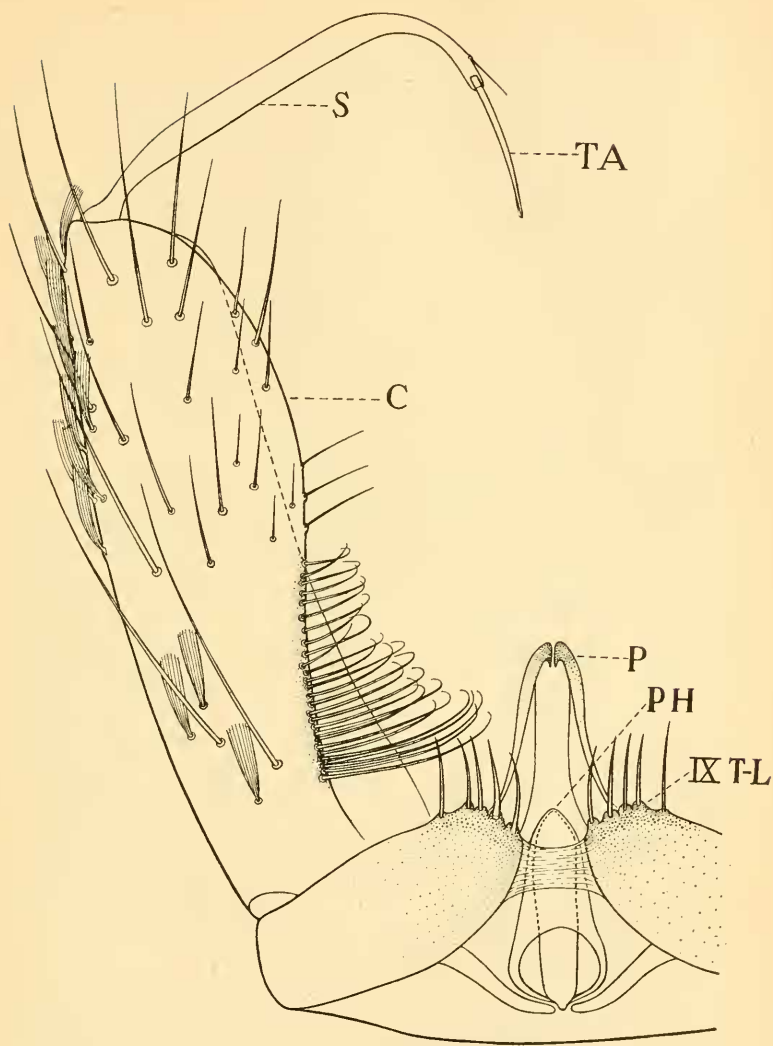
MALE.—*Head*: Proboscis about equal to fore femur, straight, dark-brown scaled, with scattered, short, forward-pointing bristles. Palpus slender, four-fifths length of proboscis, dark-brown scaled, straight, with few bristles except for 3 long ones apically. Clypeus dark, nude. Antenna about as long as proboscis, the flagellum pale, with a whorl of long dark hairs arising from middle of each segment; torus dark. Vertex and lateral surface of head covered with broad, imbricated scales, dark with bronzy to metallic blue-green reflection, except for a small patch of broad white scales dorsolaterally; long, heavy, dark bristles present along eye margins; (nape hidden in type, but paratypes show a small patch of dark upright forked scales). *Thorax*: Scutum with integument brown, clothed with rather coarse lanceolate golden-brown scales; long, dark, heavy bristles arising from the disc and from the anterior and lateral margins. Scutellum clothed with broad dark scales with bronzy to metallic blue-green reflection (a few of which extend onto posterior margin of scutum); long, dark bristles arising from the posterior border. Postnotum dark, bare. Anterior pronotal lobe small, with long, dark bristles and broad dingy white scales; posterior pronotal lobe dark with a few dusky, semi-broad appressed scales with metallic blue-green reflection on upper half and a row of 4 long bristles along posterior



A. Pigmentation of the thoracic integument (diagrammatic) of *Aedes (Pseudoskusea) lunulatus*, n. sp.; B. Head of larva of *A. (P.) lunulatus*; C. Caudal segments of larva of *A. (P.) lunulatus*; D. Head of larva of *Aedes (Skusea) dasyorrhus*, n. sp.; E. caudal segments of larva of *A. (S.) dasyorrhus*.

border. Propleuron with a patch of broad silvery white scales and 4 long dark bristles. Pleural integument dark, with 3 large conspicuous patches of broad silvery white scales, these on the upper and lower sternopleuron and the upper mesepimeron; a row of dark bristles of various lengths along posterior margin of sternopleuron; mesepimeron with a patch of hair-like bristles on the upper posterior portion, not arising from the patch of broad scales, lower bristles absent; postspiracular area with a group of about 6 dark bristles. Wing length about two and one-half millimeters; all scales dark, outstanding (plume) scales of veins 2 to 4 elongate, narrow, those at tips of fork cells slightly shorter and denser; anterior fork cell twice as long as its base and arising about level with posterior fork cell; posterior cross vein more basal than medial by a distance of almost 3 times its own length. Haltere stem pale, knob dusky. Mid and hind coxae with conspicuous patches of broad, silvery white scales, fore coxa with white patch interrupted by central patch of dark scales. Legs dark scaled with bronzy to metallic blue-green reflection, the femora paler on inner surfaces for about half their length; tarsal claws simple, subequal. *Abdomen*: Tergites dark scaled with bronzy to metallic blue-green reflection, except for basal lateral white spots extending nearly the whole length of segment on I and II, not more than half length of the segment on III to VII; sternites pale scaled basally, becoming dark apically. *Hypipygium* (Plate 13): Ninth tergite (IX-T) a narrow, weakly chitinized band, lacking lobes or setae; ninth sternite with a patch of about 11 short setae medio-posteriorly (not illustrated). Paraprocts (P) well developed, heavily sclerotized apically. Phallosome (PH) with basal third constricted, the remainder bulbous, abruptly tapered to a point at apex; closed dorsally at apical fourth, the closed portion with a medio-dorsal carina; open ventrally. Coxite (C) about three and a half times as long as mid-width, the outer and ventral aspects densely clothed with large scales and with scattered long, strong setae; a conspicuous row of setae along the full length of the inner margin. Basal lobe very large, divided into 3 sublobes as follows: a dorsal fleshy, thumblike sublobe (BLD) directed toward the coxite and clothed with slender hairs laterally and a few heavy, long setae apically; a medial sublobe (BLM) with 4 heavy, flattened, graduated filaments arising from contiguous bases and with 3 short spines arising near these bases; and a stout ventral pedicel-like sublobe (BLV) bearing 2 heavy, flattened filaments reaching the apex of the coxite. Coxite prolonged apically into a narrowly rounded tip beyond base of style and bearing numerous long setae; a small, finger-like apical lobe (AL) bearing slender hairs. A drooping appendage arising from the inner surface of the coxite and extending downward about to middle of coxite and terminating in a dense tail of long, mesally-directed hairs. Style (S) arising sub-apically, slightly less than half as long as coxite, straight, nearly parallel-sided, bluntly rounded apically, finely and sparsely pilose, scaled on outer surfaces, with a few rather long setae on outer margin beyond middle, as well as 1 or 2 pairs of smaller subapical hairs





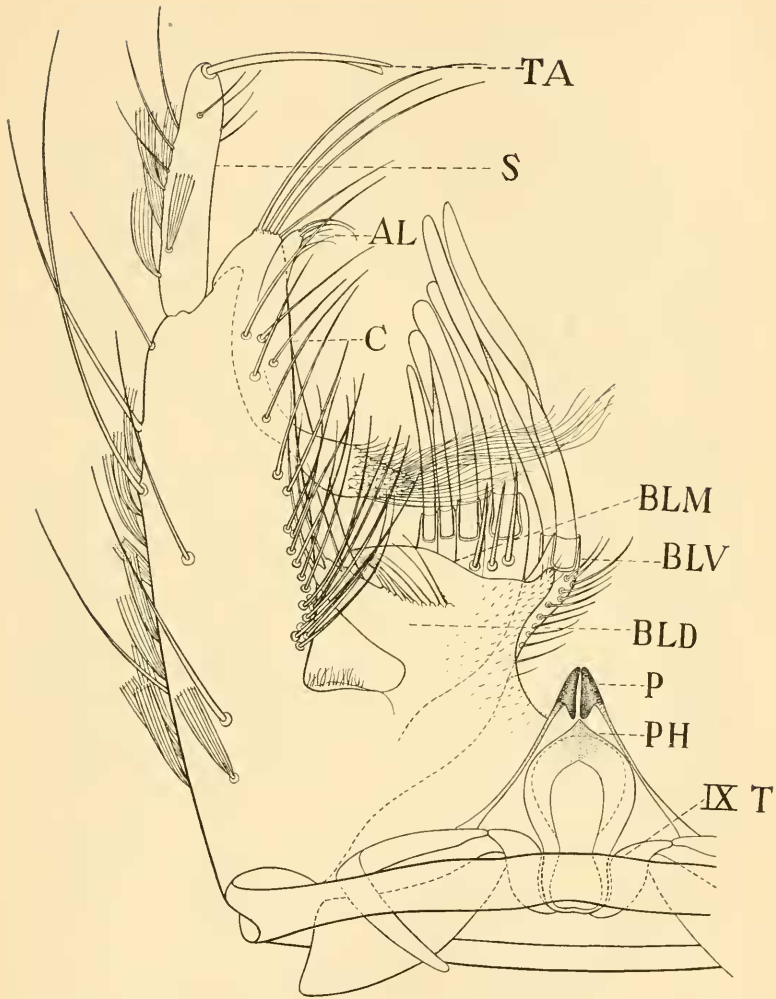
Hypopygium of *A. (P.) lunulatus*

dorsally and ventrally. Terminal appendage (TA) about three-fourths as long as style, slightly bowed, slender, split apically.

FEMALE.—Similar to male except as follows: Palpus about one-fifth as long as proboscis, dark scaled; antenna dark with pale pubescence, a whorl of about 5 long bristles arising from the base of each flagellar segment, wing scales at the tips of veins 2 and 4 short and broad; eighth segment and cerci retracted.

LARVA (Plate 11, D and E).—*Head*: About as long as wide. Antenna less than half as long as head, nearly straight, glabrous; shaft hair single, arising on apical third and extending beyond apex. Preclypeal spines slender, curved apically, almost as long as antenna; a slender single hair about one fourth length of preclypeal spines arising on front of head near base of each spine. Head hair A arising slightly anterior to base of antenna, with from 6 to 12 branches; B arising either slightly posterior or level with antennal base and extending well beyond front of head, single; C inserted near preclypeus, shorter than B, double; *d* slightly anterior to C and about half as long, with from 16 to 18 branches; inner sutural hair (*e*) single, outer sutural hair (*f*) double or triple. Mentum broadly triangular with about 14 lateral teeth and a larger, blunt apical tooth. *Thorax*: Metapleural hair tuft with about 8 branches, the base with two short spines. *Abdomen*: Lateral abdominal hairs of segments I and II with from 5 to 8 branches, III and IV with 3 or 4 branches, V with 2 or 3 branches. Lateral comb of segment VIII a dense triangular patch of about 100 small, narrow, apically rounded and finely fringed scales; pentad hair 1 with from 3 to 5 branches, hairs 2 and 4 single, hair 3 with 4 or 5 lightly plumose branches, hair 5 double, very lightly plumose. Siphon ratio about 2:1, tapered only slightly apically; acus absent; 8 to 11 pecten teeth extending about to middle, each tooth blade-like, very finely fringed to the tip along one side; hair single, inserted just beyond apical pecten tooth, about as long as width of siphon, very finely plumose; dorsal preapical spine longer than apical pecten tooth. Saddle small, the lateral hair single and finely plumose; dorsal subcaudal hair tuft about 10-branched, ventral one single (one of the Biak specimens with a fine fraying at base of ventral hair); ventral brush with 4 or 5 pairs of branched hairs on a grid; anal gills bulbous, dorsal pair about as long as saddle, ventral pair not so wide and about three-fourths as long.

*Holotype*.—Male (660A), reared from larva taken from cans at edge of mangrove swamp, possibly with partially salt water, on Cape Tjeweri, Jatnfa Bay, Hollandia, Netherlands New Guinea, 4 February 1945, W. V. King, collector. *Allotype*.—Female (660A) same data as above. *Paratypes*.—(660A) Three males, 2 females (with 2 larvae and 6 larval exuviae), same data as above; 1 male, 1 female (with 2 larval exuviae), from larvae in metal container, Biak, Shouten Islands, off the north coast of Netherlands New Guinea, October, 1944, collected by members of the 17th Malaria Survey Unit. *Holotype*,



Hypopygium of *A. (S.) dasyorhus*

allotype, paratypes, and larval material, deposited in the United States National Museum; others in the Museum of the Division of Economic Entomology, Council for Scientific and Industrial Research, Canberra, A. C. T., Australia.

The hypopygium of this species differs from that of the most closely related species, *Aedes* (*Skusca*) *amesii* (Ludlow) of the Philippines as follows: phallosome abruptly tapered apically rather than gradually tapered, the medio-dorsal carina somewhat weaker; coxite with fewer long setae, dorsobasal sublobe not bulbous and of different vestiture, the mediobasal sublobe with 3 spines and 4 graduated filaments from contiguous bases rather than with no spines and seven subequal filaments; from separated elongate bases; the presence of drooping tail-like appendage; the absence of apical filaments and the presence of a small apical lobe; style parallel sided rather than bulbous basally; terminal appendage longer and distinctly split apically.

Externally the male is nearly identical with that of *A. amesii* except that the palpi are four-fifths the length of the proboscis, rather than equal to the proboscis, and the scutal scales are distinctly coarser and of a golden brown rather than dark brown shade. The scutal differences also apply to the female. The larva can be distinguished from that of *amesii* by the shorter siphon, the short, bulbous, unequal anal gills, and the position of *d* head hair which is anterior rather than posterior of *C*. In the series at hand, the *d* head hair also has a greater number of branches and there are more lateral comb scales than on *amesii*.

This species derives its name (Gk. *dasy*, hairy; *orrhos*, tail) from the distinctive drooping, hairy appendage of the coxite.

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